SYDNEY TOWER

THE TALLEST STRUCTURE IN THE SOUTHERN HEMISPHERE IS 325 METRES HIGH AND WAS OPENED IN SEPTEMBER 1981. ITS DESIGN AND CONSTRUCTION FOR AMP SOCIETY WAS CONCEIVED AND EXECUTED BY AUSTRALIANS, ARCHITECTS (DONALD CRONE AND ASSOCIATES), ENGINEERS (WARGON CHAPMAN AND ASSOCIATES) AND CONTRACTORS (CONCRETE CONSTRUCTIONS) APPLYING ADVANCED TECHNOLOGY AND TECHNIQUES.

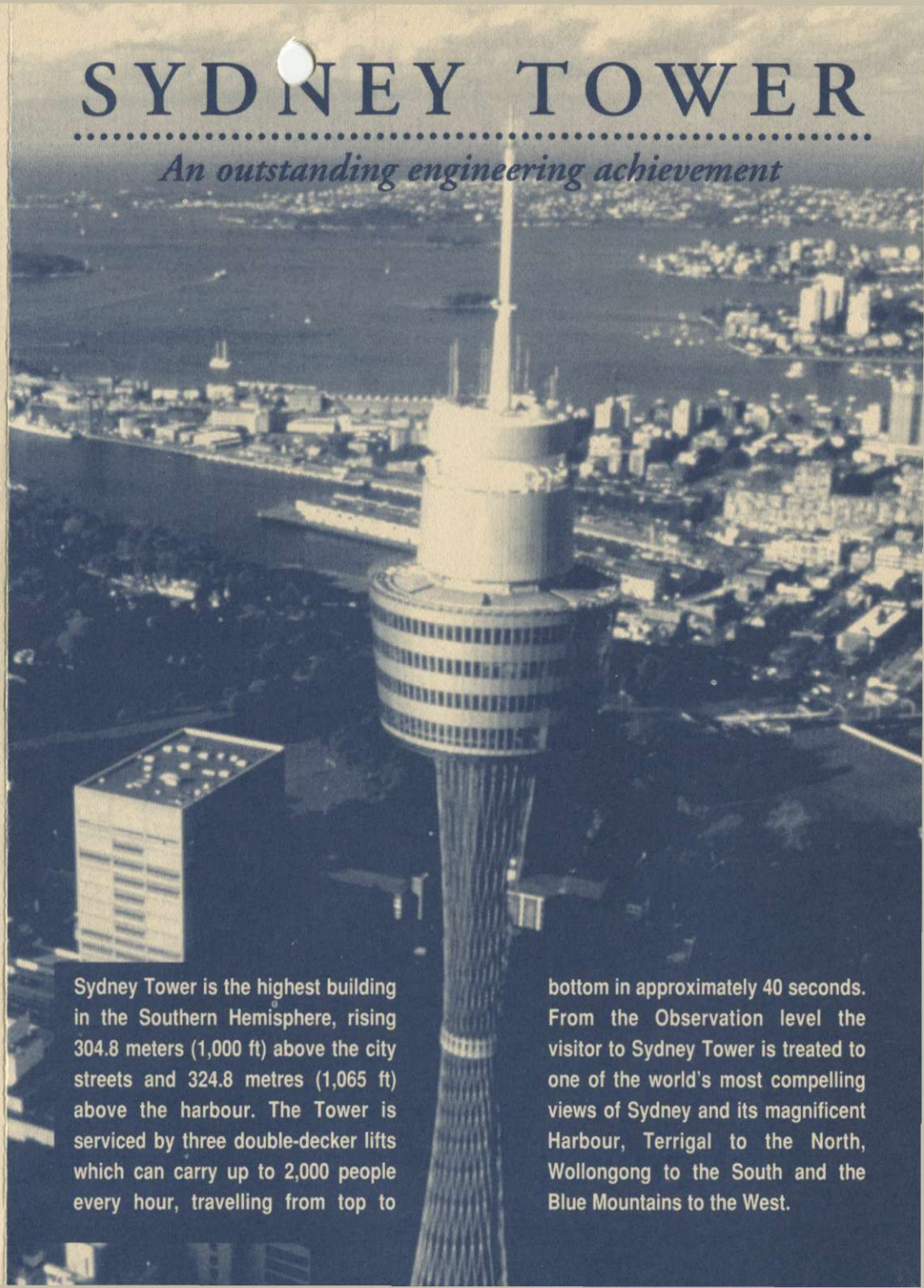
THE ENTIRE STRUCTURE WAS MANUFACTURED IN AUSTRALIA USING (WITH SOME MINOR EXCEPTIONS) AUSTRALIAN MADE MATERIALS. THE NINE-STOREY TURRET WHICH SERVES AS A TOURIST-TELECOMMUNICATIONS FACILITY IS SUPPORTED ON THE SHAFT AND IS STABILISED BY 2 MASS DAMPERS TUNED TO PREVENT UNDESIRABLE MOVEMENT DUE TO WIND FORCES. THE DAMPING SYSTEM WAS PIONEERED IN AUSTRALIA AND HAS SINCE BEEN USED IN A NUMBER OF BUILDINGS AROUND THE WORLD. THE TOWER WAS INSTRUMENTAL IN CONSOLIDATING THE RETAIL HEART OF THE CITY AND IT SYMBOLISES THE PROGRESSIVE SPIRIT OF SYDNEY.

DEDICATED BY THE INSTITUTION OF ENGINEERS,
AUSTRALIA
ON THE OCCASION OF ITS 75th ANNIVERSARY 1994

AMP

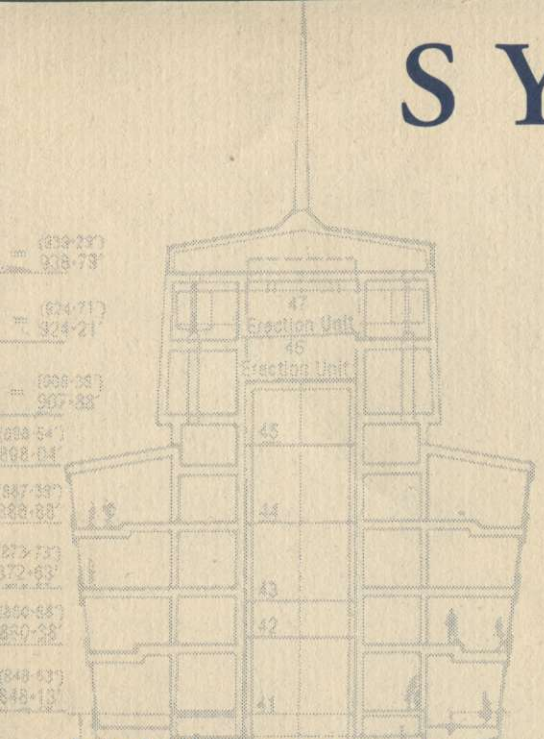
SYDNEY TOWER

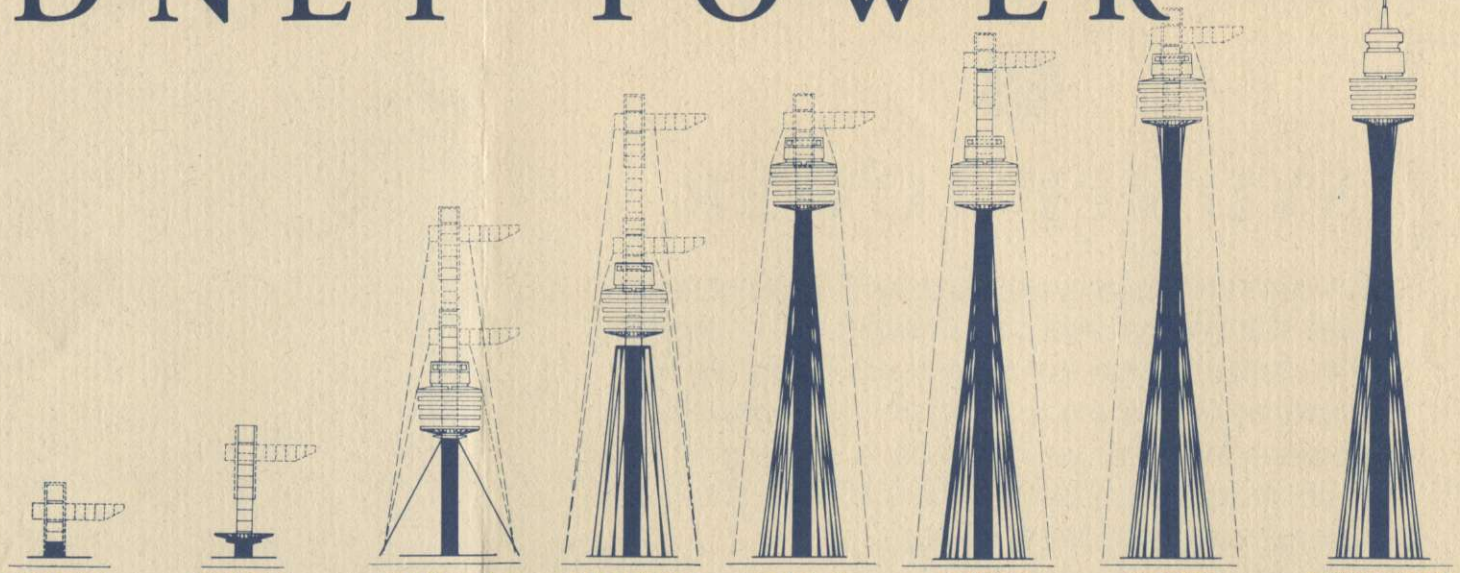
An outstanding engineering achievement



Sydney Tower is the highest building in the Southern Hemisphere, rising 304.8 meters (1,000 ft) above the city streets and 324.8 metres (1,065 ft) above the harbour. The Tower is serviced by three double-decker lifts which can carry up to 2,000 people every hour, travelling from top to bottom in approximately 40 seconds. From the Observation level the visitor to Sydney Tower is treated to one of the world's most compelling views of Sydney and its magnificent Harbour, Terrigal to the North, Wollongong to the South and the Blue Mountains to the West.

SYDNEY TOWER





The AMP Society's Centrepoint project, designed to breathe new life into Sydney's retailing heart, always had a tower planned as a physical focus for the people of Sydney.

The idea was not new. The Eiffel Tower was a centre of Parisian controversy during its construction for the International Exposition of 1889, but emerged as a profitable enterprise, a major tourist attraction and finally as the signature of the French capital.

For Sydney Tower, the path from concept to reality led around the world and through many areas of architecture, engineering and their associated sciences.

The architect, Donald Crone, and the structural engineer, Alex Wargon, enlisted the best people in the world in many disciplines to ensure that the tallest building south of the equator would be unique and successful.

The Tower is designed to withstand the worst predictable sydney weather in the next 1000 years and its aerodynamic qualities owe a great deal to the advice of Dr Barry Vickery who is regarded as the leading world authority on the effect of gusting winds on tall structure.

Following his advice, and consultation with an international scientific fraternity, the tower was equipped with an unusual hydraulic method of keeping sway in high winds within human comfort levels.

A 162,000 litre water tank is suspended on cables in the turret and sways at the same frequency as the building, but out of phase with it.

This contra-movement provides a mechanical damping of wind-enduced vibrations.

Fluting on the Tower shaft is also designed to prevent wind vortices forming on the buildings leeward side and causing oscillation.

Cables were added to provide extra stiffness to the slender structure and an Australian consortium was formed to make the cables under a universally-proven Swiss patent.

The builders, Concrete Constructions Pty Ltd, consulted the English firm, Redpath Dorman Long, of Bedford, England. Together, they devised methods of constructing the Tower from pre-made sections assembled on the roof of the 50,800-tonne concrete Centrepoint building.

The stem of the tower was made by stacking 46 barrel-shaped steel units on top of each other on the roof.

Each unit was brought to the 74m high workplace in seven segments, welded together and fitted with stairs, lift rails, service pipes and internal partitions before being lifted into position by a special gantry perched on top of the "stack".

The 1920-tonne turret, the golden section now familiar to Sydney people, was assembled around the stem and lifted hydraulically at a rate of nine metres a week.

Studies in a wind tunnel in Canada helped determine the sequence of adding cables to the structure. Drawing the cables in to form a waist added grace to the appearance of the tower and distributed stress caused by wind thereby giving the structure the stiffness of a conventional building of the same height.

A final stage of construction was the addition of a spire capable of holding telecommunications antennae which took the tower to its full height of 324.8m above harbour level.

Concrete Constructions built the turret to within 5mm of its planned height despite the complexity of the engineering problems it had to overcome in the project.

Opened in September 1981 the building has been described by the President of the Institute of Structural Engineers in Britain as "one of the most exciting building schemes in the world".